

Part 3 -- Amendment to the Claims

1.-21. (Canceled)

22. (Presently amended) A method of configuring an upward facing support contour adapted to support and relieve pressure on anatomical tissues which surround a skeletal structure of a pelvic area and thigh bones of a person when the person is seated on and supported by the support contour, ~~a support contour to contact and support a person in a sitting position when the person is seated on the support contour~~, comprising:

defining relief areas of ~~[[in]]~~ the support contour at locations adapted to be adjacent to skin covering the ischial tuberosities, the greater trochanters and the coccyx and sacrum of the pelvic area of the person when the person is supported by ~~seated on~~ the support contour;

defining support areas of ~~[[in]]~~ the support contour at locations adapted to be adjacent to skin covering tissue masses on opposite lateral sides of the posterior buttocks and beneath the proximal thigh bones ~~thighs of the person~~ when the person is supported by ~~seated on~~ the support contour;

positioning the relief areas and the support areas to establish a relatively greater relief clearance at ~~with respect to~~ the ischial tuberosities, the greater trochanters and the coccyx and sacrum and to establish a relatively greater support protrusion at ~~lesser clearance with respect to~~ the tissue masses on the opposite lateral sides of the posterior buttocks and beneath the proximal thigh bones ~~thighs of the person~~ when the person is supported by ~~seated on~~ the support contour;

establishing the relatively greater relief clearance of the relief areas and the relatively greater support protrusion ~~lesser clearance~~ of the support areas with respect to an expected representation of the anatomical shape of the pelvic area and the proximal thighs of the person when the person is supported by ~~seated on~~ the support contour;

establishing the relatively greater relief clearance of the relief areas to substantially offload support pressure on the skin adjacent to the ischial tuberosities, the greater trochanters and the coccyx and sacrum when the person is supported by ~~seated on~~ the support contour; and

establishing the relatively lesser support protrusion clearance of the support areas to transfer substantially the entire support force for supporting the person on the support contour to the tissue masses at the opposite sides of lateral posterior buttocks and beneath the proximal thigh bones ~~thighs by the support~~ areas when the person is supported by ~~seated on~~ the support contour.

23. (Canceled)

24. (Presently amended) A method as defined in claim 22, further comprising:

establishing the relatively greater relief clearance of the relief areas to substantially eliminate ~~support~~ pressure on the skin covering the ischial tuberosities during forward and backward pivoting movement and lateral tilting movement of the upper torso of the person when supported by ~~seated on~~ the support contour.

25. (Canceled)

26. (Presently amended) A method as defined in claim 22, further comprising:

positioning the support areas ~~to contact the skin covering the tissue masses on opposite~~ at the opposite lateral sides of the posterior buttocks to induce an upward component of support force on the rear of the pelvic area of the person when supported by ~~seated on~~ the support contour.

27. (Presently amended) A method as defined in claim 22, further comprising:

positioning the support areas beneath the proximal thigh bones ~~thighs~~ at an elevated position relative to the relief areas below the greater trochanters, the support areas beneath the proximal thigh bones ~~thighs~~ establishing fulcrums from which the thigh ~~leg~~ bones transfer weight from the legs distal to the proximal thighs

to the hip joints to elevate the greater trochanters relative to the relief areas adjacent to the skin covering the greater trochanters when the person is supported ~~by of the person when seated on~~ the support contour.

28. (Canceled)

29. (Presently amended) A method as defined in claim 22, further comprising:

positioning the support areas on opposite lateral sides of the posterior buttocks to induce an upward component of support force on the tissue masses on the opposite lateral sides of the posterior buttocks ~~of the person when the~~ person is supported by seated on the support contour; and

positioning the support areas beneath the proximal thigh bones ~~thighs~~ at an elevated position relative to the relief areas below the greater trochanters to establish fulcrums from which the thigh ~~leg~~ bones transfer weight from the legs distal to the proximal thighs to the hip joints to elevate the greater trochanters relative to the relief area adjacent to the skin covering the greater trochanters ~~of the person when seated on~~ when the person is supported by the support contour.

30. (Previously presented) A method as defined in claim 22 applied to configuring a support contour of a seat cushion for wheelchair.

31. (Presently amended) A method of supporting and relieving pressure on anatomical tissues which surround a skeletal structure of a pelvic area and thigh bones of a person when ~~[[in a]] sitting position on and supported by~~ a support contour ~~and supported by when the person is seated on the support contour,~~ comprising:

transferring the substantial entirety of support force for ~~associated with~~ supporting the person ~~on the support contour~~ to skin and tissue masses on opposite lateral sides of the posterior buttocks of the pelvic area and beneath the proximal thigh bones ~~thighs of the person~~ when the person is supported by seated ~~on~~ the support contour; and

substantially offloading ~~support~~ pressure and shear force from skin adjacent the ischial tuberosities, the greater trochanters and the coccyx and sacrum of the pelvic area ~~person~~ when the person is supported by ~~seated on~~ the support contour by transferring the substantial entirety of the support force to the tissue masses at the posterior lateral buttocks and beneath the proximal thigh bones.  
15 thighs.

32. (Presently amended) A method as defined in claim 31, further comprising:

substantially eliminating support pressure and shear force on the skin surrounding the ischial tuberosities, the greater trochanters in the coccyx and  
5 sacrum during an anticipated range of normal forward and ~~forward~~, backward and side to side movement of the upper torso of the person when seated on the support contour.

33. (Canceled)

34. (Canceled)

35. (Presently amended) A method as defined in claim 31, further comprising:

inducing an upward component of support force on the tissue masses on the opposite lateral sides of the posterior buttocks of the person when the  
5 person is supported by ~~seated on~~ the support contour.

36. (Presently amended) A method as defined in claim 31, further comprising:

transferring weight from the legs distal to the proximal thighs in a lever-like manner through the thigh ~~[[leg]]~~ bones to the hip joints as support force to  
5 elevate the greater trochanters ~~[[of]]~~ when the person is supported by ~~when seated~~ ~~on~~ the support contour.

37. (Previously presented) A method as defined in claim 31, applied to supporting the person in a sitting position on the support contour of a wheelchair seat cushion.

38. (Canceled)

39. (Canceled)

40. (Previously presented) A method as defined in claim 22, further comprising:  
incorporating the support contour in a support structure of a cushion;  
and

5 forming the support structure from a matrix of resilient adhered-together plastic beads.

41. (Previously presented) A method as defined in claim 40, further comprising:  
allowing air movement within the support structure through spaces between the adhered-together plastic beads.

42. (Previously presented) A method as defined in claim 31, further comprising:  
incorporating the support contour in a support structure of a cushion;  
and

5 forming the support structure from a matrix of resilient adhered-together plastic beads.

43. (Previously presented) A method as defined in claim 42, further comprising:  
allowing air movement within the support structure through spaces between the adhered-together plastic beads.

44.-47. (Canceled)

48. (Presently amended) A method as defined in claim 29, further comprising:  
positioning the support areas beneath the proximal thigh bones ~~thighs~~ to induce an upward component of support force at the hip joints created by the weight of the distal legs interacting in a lever-like manner with the support areas beneath the proximal thigh bones, ~~thighs~~; the upward component of support force

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induced by the weight of the distal legs cooperating with the upward component of support force from the support areas at ~~[[on]]~~ the opposite lateral sides of the posterior buttocks to transfer substantially the entire support force to the pelvic area ~~of the person when seated on~~ when the person is supported by the support contour.

49. (Presently amended) A method as defined in claim 29, further comprising:

preventing the pelvic area ~~of the person~~ from tipping backward in response to the upward component of support force at the hip joints by applying a forward component of support force and the upward component of support force from the support areas at the ~~[[on]]~~ opposite lateral sides of the posterior buttocks to the rear pelvic area ~~of the person when seated on~~ when the person is supported by the support contour.

50. (Presently amended) A method as defined in claim 49, further comprising:

applying the upward and forward component of support force from the support areas on the opposite lateral sides of the posterior buttocks ~~beginning at~~ from an uppermost position on the opposite lateral sides of the posterior buttocks rear pelvic area ~~of the person~~ which is greater in relative height than the support areas beneath the proximal thighs.

51. (Presently amended) A method as defined in claim 31, further comprising:

inducing an upward and forward component of support force on the tissue masses on the opposite lateral sides of the posterior buttocks ~~of the person~~ when the person is supported by ~~seated on~~ the support contour;

transferring weight from the legs distal to the proximal thighs in a lever-like manner through the thigh ~~[[leg]]~~ bones to the hip joints as support force to elevate the hip joints ~~greater trochanters of the person~~ when the person is supported by ~~seated on~~ the support contour; and

10 preventing the pelvic area ~~of the person~~ from tipping backward in response to the elevational support force at the hip joints by applying the upward and forward component of support force on the opposite lateral sides of the posterior buttocks to the rear pelvic area ~~of the person~~ when the person is supported by ~~seated on~~ the support contour.

52. (Presently amended) A method as defined in claim 51, further comprising:

5 applying the upward and forward component of support force from the support areas on the opposite lateral sides of the posterior buttocks from beginning at an uppermost position on the rear pelvic area ~~of the person~~ which is greater in relative height than the support areas ~~point~~ at which the weight from the distal legs ~~distal to the proximal thighs~~ is transferred in a lever like manner through the thigh leg bones to the hip joints.

53. (New) A cushion (20) comprising an upward facing support contour (22) adapted to support and relieve pressure on anatomical tissues which surround a skeletal structure of a pelvic area (24) and thigh bones (26) of a person when the person is seated on the cushion (20) and is supported by the support contour (22),  
5 the cushion (20) extending longitudinally from a rear wall (48) to a front edge (68), the cushion (20) also extending transversely between opposite transverse edges (49, 51), each transverse edge (49, 51) extending longitudinally between the rear wall (48) and the front edge (68), the support contour defined relative to a longitudinal midline (58) which extends midway between the opposite transverse  
10 edges (49, 51), the support contour (22) further defined relative to the horizontal and the vertical with the horizontal having a component which extends longitudinally and transversely and with the vertical having a component which extends perpendicular to the horizontal, the pelvic area (24) of the person including ischial tuberosities (30) and greater trochanters (38) and coccyx (50) and sacrum (52), the  
15 thigh bones (26) of the person when seated on the cushion (20) and supported by the support contour (22) extending generally longitudinally forward from the greater

trochanters (38) to knee joints (67) of the thigh bones (26), the knee joint (67) of each thigh bone (26) located adjacent to the front edge (68) when the person is supported by the support contour (22), a rear portion of the pelvic area (24) located adjacent to the rear wall (48) when the person is supported on the support contour (22), the rear wall (48) having a general midline contour (56) which represents the anatomical shape of a rear portion of the pelvic area (24) adjacent to the rear wall (48), the support contour (22) comprising:

a cavity (28) located adjacent to the rear wall (48) and spaced rearward from the front edge (68) along the longitudinal midline (58), the cavity (28) located between and spaced transversely inward from the opposite transverse edges (49, 51), the cavity (28) extending downward to a lower surface (32), the lower surface (32) of the cavity (28) adapted to be located beneath and horizontal from the ischial tuberosities (30) of the pelvic area (24) when the person is supported by the support contour, the lower surface (32) of the cavity constituting an ischial tuberosities relief area (32) which is spaced from the ischial tuberosities (30) to substantially offload pressure and shear force from the skin adjacent to the ischial tuberosities (30) when the person is supported by the support contour (22);

two transverse relief areas (36), each transverse relief area (36) spaced transversely to the outside of the cavity (28) and transversely to the inside of the opposite transverse edges (49, 51), each transverse relief area (36) spaced vertically above the lower surface (32) of the cavity (28), the support contour (22) extending transversely outward and upward from the lower surface (32) of the cavity to the transverse relief areas (36), the transverse relief areas (36) adapted to be located beneath and horizontal from the greater trochanters (38) of the pelvic area (24) when the person is supported by the support contour (22), each transverse relief area (36) constituting a greater trochanter relief area (36) which is spaced from each greater trochanter (38) to substantially offload pressure and shear force from the skin adjacent to the each greater trochanter (38) when the person is supported by the support contour (22);



a channel (46) in the back wall (48) at a location approximately centered transversely about the longitudinal midline (58), the channel (46) extending generally vertically upward from the lower surface (32) of the cavity (28), the channel (46) recessed rearward into the back wall (48) relative to the midline contour (56) of the back wall (48), the channel (46) adapted to be located beneath and horizontal from the coccyx (50) and sacrum (52) of the pelvic area (24) when the person is supported by the support contour (22), the channel (46) constituting a coccyx and sacrum relief area (46) which is spaced sufficiently from the coccyx (50) and sacrum (52) to substantially offload pressure and shear force from the skin adjacent to the coccyx (50) and sacrum (52) when the person is supported by the support contour (22);

two rear support areas (60, 62), each rear support area (60, 62) located on the back wall (48) on respectively opposite transverse sides of the longitudinal midline (58), each rear support area (60, 62) located between the channel (46) and one transverse edge (49, 51), each rear support area (60, 62) protruding forward relative to the midline contour (56) of the back wall (48), the rear support areas (60, 62) extending vertically downward and longitudinally forward on the back wall (48) toward the lower surface (32) of the cavity (28), the rear support areas (60, 62) adapted to be located adjacent to the skin and tissue masses on opposite lateral sides of the posterior buttocks of the pelvic area (24) when the person is supported by the support contour (22), the rear support areas (60, 62) constituting lateral posterior buttocks support areas (60, 62) which support substantially the entire pressure and support force for the rear of the pelvic area on the opposite lateral sides of the posterior buttocks when the person is supported by the support contour (22); and

two forward support areas (64, 66), each forward support area (64, 66) located forward of the cavity (28) and spaced transversely to the inside of the opposite transverse edges (49, 51), each forward support area (64, 66) located on an opposite lateral side of the longitudinal midline from the other forward support

75 area (66, 64), the support contour (22) extending upward and forward from the  
lower surface (32) of the cavity (28) to each forward support area (64, 66), the  
support contour (22) extending generally longitudinally forward and downward from  
each forward support area (64, 66) to the front edge (68), each forward support  
area (64, 66) located longitudinally closer to the cavity (28) than to the front edge  
80 (68), each forward support area (64, 66) adapted to be located beneath the  
proximal thigh bones (26) at a position which is closer to the greater trochanters  
(38) compared to the location of the knee joints (67) on the thigh bones (26) when  
the person is supported by the support contour (22), each forward support area (64,  
66) extending generally transversely beneath and horizontally across the proximal  
85 thigh bones (26), the forward support areas (64, 66) constituting proximal thigh  
support areas (64, 66) which support substantially the remaining entire pressure  
and support force for the pelvic area (24) not supplied by the lateral posterior  
buttocks support areas (60, 62) when the person is supported by the support  
contour (22).

54. (New) A cushion as defined in claim 53, wherein:

the lateral posterior buttocks support areas (60, 62) and the proximal  
thigh support areas (64, 66) surround the pelvic area (24) at four transversely  
spaced locations (60, 62, 64, 66) to support the pelvic area and facilitate postural  
5 alignment and stabilization of the pelvic area against forward and backward and  
lateral side to side movement when the person is supported by the support contour  
(22) while the ischial tuberosities relief area (32), the greater trochanters relief  
areas (36), and the coccyx and sacrum relief area (46) offload pressure from the  
ischial tuberosities (30), the greater trochanters (38) and coccyx (50) and sacrum  
10 (52).

55. (New) A cushion as defined in claim 53, wherein:

the horizontal extent of the ischial tuberosities relief area (32) and of  
the greater trochanters relief areas (36) and of the coccyx and sacrum relief area  
(46) is sufficient to substantially eliminate pressure on the skin covering the ischial

5    tuberosities (30) and the greater trochanters (38) and the coccyx (50) and sacrum (52) during normal forward and backward pivoting movement of the pelvic area and an upper torso of the person when supported by the support contour (22).

56.    (New) A cushion as defined in claim 55, wherein:

the horizontal extent of the ischial tuberosities relief area (32) and of the greater trochanters relief areas (36) and of the coccyx and sacrum relief area (46) is sufficient to substantially eliminate pressure on the skin covering the ischial tuberosities (30) and the greater trochanters (38) and the coccyx (50) and sacrum (52) during normal lateral tilting movement of the upper torso of the person when supported by the support contour (22).

57.    (New) A cushion as defined in claim 53, wherein:

the lateral posterior buttocks support areas (60, 62) induce an upward component of support force on the opposite lateral sides of the posterior buttocks when the person is supported by the support contour (22).

58.    (New) A cushion as defined in claim 57, wherein:

each lateral posterior buttocks support area (60, 62) generally curves vertically downwardly and transversely inward and longitudinally forward from the back wall (48) toward the lower surface (32) of the cavity (28) and terminates above the lower surface (32).

59.    (New) A cushion as defined in claim 53, further comprising:

a clearance area (70) extending upward and forward from the lower surface (32) of the cavity (28) and approximately centered about the longitudinal midline (58), the clearance area (70) adapted to be located adjacent to a perineal area of the person when supported by the support contour (22), the clearance area establishing space for air circulation at the perineal area.

60.    (New) A cushion as defined in claim 53, wherein:

the proximal thigh support areas (64, 66) interact in a fulcrum-like manner with the proximal thigh bones (26) of the person when supported by the support contour (22) to create elevational support force at the hip joints from weight

5 of the legs distal to the proximal thighs when the person is supported by the support contour (22).

61. (New) A cushion as defined in claim 60, wherein:

the locations of the proximal thigh support areas (64, 66) beneath the proximal thigh bones of the person when supported by the support contour (22) establish a lever-like mechanical advantage for increasing the amount of

5 elevational support force at the hip joints from the weight of the distal legs.

62. (New) A cushion as defined in claim 61, wherein:

the elevational support force from the lever-like mechanical advantage of the fulcrum-like interaction of the proximal thigh support areas (64, 66) with the proximal thigh bones (26) of the person when supported by the support contour (22) elevates the greater trochanters (38) relative to the greater trochanters relief areas (36) when the person is supported by the support contour (22).

5 63. (New) A cushion as defined in claim 62, wherein:

the support force from the lateral posterior buttocks support areas (60, 62) preventing the pelvic area (24) from tipping backward in response to the elevational support force at the hip joints.

64. (New) A cushion as defined in claim 53, wherein:

the back wall (48) surrounds the rear portion of the pelvic area (24) when the person is supported by the support contour (22);

5 the back wall (48) curves downward and longitudinally forward and transversely inward to the lower surface (32) of the cavity (28);

the lateral posterior buttocks support areas (60, 62) curve vertically downward and transversely and longitudinally forward from an upper position on the back wall toward the lower surface (32); and

10 the proximal thigh support areas (64, 66) are vertically located relatively closer to the lower surface (32) than the uppermost portions of the lateral posterior buttocks support areas (60, 62).

65. (New) A cushion as defined in claim 53, wherein:

the channel (46) has a V-shaped curvature of increasing transverse width with increasing vertical height above the lower surface (32) of the cavity (28).

66. (New) A cushion as defined in claim 53, wherein:

the rear wall (48) extends from one transverse edge (49, 51) of the cushion (20) adjacent to one transverse relief area (36) around the rear of the cavity (28) to the other transverse edge (51, 49) of the cushion (20) adjacent to the other transverse relief area (36).

67. (New) A cushion as defined in claim 53, comprising:

a support structure (20) into which the support contour (22) is incorporated, the support structure comprising a matrix of resilient adhered-together plastic beads.

68. (New) A cushion as defined in claim 67, wherein:

the adhered-together plastic beads define spaces between the beads to establish permeability for air movement within the support structure.

69. (New) A cushion as defined in claim 53, incorporated in a wheelchair.

70. (New) A method as defined in claim 31, further comprising:

inducing an upward and forward component of support force on the tissue masses on the opposite lateral sides of the posterior buttocks when the person is supported by the support contour; and

transferring weight from the legs distal to the proximal thighs in a lever-like manner through the thigh bones to the hip joints as support force to elevate the hip joints when the person is supported by the support contour.

71. (New) A method as defined in claim 70, further comprising:

supporting the proximal thigh bones of the person when supported by the support contour to interact in a fulcrum-like manner with the weight of the legs distal to the proximal thighs to create the elevational support force on the hip joints.

72. (New) A method as defined in claim 71, further comprising:

establishing a lever-like mechanical advantage for increasing the amount of elevational support force at the hip joints from the weight of the distal

- 5 legs by locating the position of support for the proximal thigh bones closer to the greater trochanters of the thigh bones than to the knee joint of the thigh bones.

73. (New) A method as defined in claim 31, further comprising:  
offloading sufficient pressure and shear force to substantially  
eliminate pressure and shear force on the skin covering the ischial tuberosities, the  
greater trochanters in the coccyx and sacrum.

74. (New) A method as defined in claim 31, further comprising:  
establishing a clearance area in the support contour located adjacent  
to a perineal area of the person when the person is supported by the support  
contour; and

- 5 using the clearance area adjacent to the perineal area as space for air  
circulation at the perineal area when the person is supported by the support  
contour.

75. (New) A method as defined in claim 27, further comprising:  
establishing a lever-like mechanical advantage for increasing the  
amount of elevational support force at the hip joints from the weight of the distal  
legs by locating the positions of fulcrum support areas closer to the greater  
5 trochanters of the thigh bones than to the knee joints of the thigh bones.

76. (New) A method as defined in claim 22, further comprising:  
defining a clearance area of the support contour located adjacent to a  
perineal area of the person when the person is supported by the support contour;  
and

- 5 using the clearance area adjacent to the perineal area as space for air  
circulation at the perineal area when the person is supported by the support  
contour.